III. Remarks

Claims 5-15 and 20-36 are pending and stand rejected. In addition, Claims 8, 11 and 29-31 are objected to. Reconsideration of the rejections and objections in light of the amendment set forth above and the following arguments are respectfully requested.

A. Claim Objections

The Official Action objects to Claims 8, 11 and 29-31 under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only and cannot depend from any other multiple dependent claims. Applicants submit that the amendments to Claims 8, 11 and 29-31 address the Examiner's objection, as the claims no longer include dependencies from multiple dependent claims or are not themselves multiple dependent. In addition, Claims 7 and 27, although not specifically objected to by the Examiner, have been amended to remove any multiple dependency upon a multiple dependent claim.

B. Additional Amendments

Claims 12, 22, 26 and 27 have been amended to remove typographical errors, specifically the additional or misplaced comma "," after "to" in Line 1 of each claim.

Claim 20 has been amended to depend from Claim 35 "or Claim 36."

Claims 35 and 36 are amended as described below.

C. Claim Rejections Under 35 U.S.C. § 102(b)

The Action rejects Claims 5-15 and 20-36 as being anticipated by U.S. Patent No. 5,212,698 (Kafka at al.). It is respectfully submitted that the claims to the present application are patentable over Kafka et al. for the following reasons.

Reference is made to the independent claims 33, 34, 35 and 36. It appears that the Examiner has not considered all features of these independent claims. The Examiner correctly

concludes that Kafka teaches the active medium, a plurality of resonator mirrors with an incoupling mirror, an outcoupling mirror and several tilted mirrors as well as a compensating mechanism for the compensation of the group velocity dispersion of the light pulses. However, the resonator configuration disclosed by Kafka does not include a dispersion setting device for the introduction of a linear dispersion. The component 60 cited by the Examiner (column 5, lines 58-60) is adapted for shifting the envelope of the pulses only.

The group velocity dispersion (or: dispersion of second order) and the linear dispersion (or: dispersion of first order) are completely different material properties. Reference is made to the attached chapter from the Internet Encyclopedia "Wikipedia" explaining the term "Dispersion". In particular, the differences between the phase velocity and the group velocity are explained. While the phase velocity is the velocity at which the phase of any one frequency component will propagate, the group velocity is the rate that changes the amplitude (propagation velocity of the envelope of the wave). The phase velocity is changed by the linear dispersion, while the group velocity is changed by the group velocity dispersion.

The linear dispersion is represented by the refractive index n. The group velocity dispersion (GVD) is a more complicated parameter (see page 2 of the attached chapter "Dispersion"). By the introduction of a linear dispersion into the light path of the resonator, the frequency of at least one mode can be adjusted to a predetermined value. This adjustment has been explained with reference to the function of the mirror 34 shown in present Figure 1 and in the description (Page 14, ph. 2). Due to the rotation of the mirror 34, the mode distances are changed with the result of a change in the repetition frequency of the light pulses.

Such a change of the mode distances is not disclosed with the end mirror 60 shown in Figure 3c of the Kafka patent. Physically, the curved end mirror represents a filter having only the same function as the slit-end mirror-combination shown in Fig. 3b (Column 5, Lines 51-57). After the second prism (Fig. 3b), the frequency components (modes) of the pulses travel with a lateral distance in space. With the slit 56 (Fig. 3b), some of the frequency components may pass while other frequency components are blocked. The curved mirror 60 (Fig. 3c) has the same effect. With the rotation of the curved mirror 60, some of the frequency components (near the

rotation axis) are reflected back to the second prism 52 while the remaining frequency components are reflected into the surrounding space. As the result, these latter reflected components no longer contribute to the circulating pulses in the laser resonator (blocking these frequency components). The frequency components which have not been reflected into the surrounding space, circulate in the resonator. These frequency components are not subjected to a changed linear dispersion. These frequency components are not subjected to any change.

On the other hand, in one embodiment, a plane mirror used in the invention changes the lateral spacing of the frequency components all of which are reflected back to the laser resonator. As a result, the frequencies are adjusted depending on the rotation angle; this effect is equivalent to the introduction of a linear dispersion (refractive material).

At this point, it is important to note that the invention allows the setting of the linear dispersion to a predetermined amount. Any material in the resonator (even the air between the mirrors) introduces a linear dispersion. However, the presence of the materials does not allow the introduction of a predetermined linear dispersion.

In addition, with regard to this introduction of the predetermined linear dispersion, the independent claims contain further details, which have not been considered by the Examiner.

In Claim 33, various alternatives for introducing the linear dispersion have been mentioned. None of these alternatives is disclosed or suggested in the Kafka patent.

Claim 34 defines a further embodiment referring to the change of the spectrally specific effective resonator length in a resonator branch through which the light pulses traverse spectrally spatially separated from each other. In this branch, which is comparable with the resonator part after the second prism 52 (e. g. Fig. 3c of the Kafka patent), the effective resonator length is changed for each frequency component specifically. In contrast, the Kafka patent teaches blocking some of the frequency components, while other frequency components are kept unchanged.

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Claim 35 has been amended to include the limitation "predetermined" into the dispersion setting device feature consistent with the foregoing. The dispersion setting device element was also inadvertently omitted from Claim 36, although it is referred to in Claim 36 by "said dispersion setting device." Claim 36 has been amended to correct this apparent error and to make Claim 36 consistent with the foregoing.

The corresponding arguments are true with regard to the device claims.

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IV. Conclusion

In view of the foregoing remarks and amendments, Applicants submit that this application is in condition for allowance at an early date, which action is earnestly solicited.

The Assistant Commissioner for Patents is hereby authorized to charge any additional fees or credit any excess payment that may be associated with this communication to deposit account 04-1769.

Respectfully submitted,

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